

REMARKS

This response is submitted in reply to the Final Office Action mailed on April 13, 2006. Claims 1-11, 13-16, 23 and 24 are pending in the patent application. No new matter has been added by this response.

In the Final Office Action, claims 1, 6-11, 13, 16, 23 and 24 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,928,043 to Plunkett ("*Plunkett*"). Applicants disagree with and traverse this rejection for the following reasons.

Plunkett is directed to a back emf sampling circuit using a phase-locked loop motor control method. The phase-locked loop control is a six step drive control for three-phase motors. (See Applicants' application at page 1, line 19 to page 2, line 11). The Final Office Action states that *Plunkett* discloses "varying an amplitude of the drive voltage in accordance with the speed control signal" at Col. 4, line 33 to Col. 5, line 44. (See the Final Office Action, page 2). Applicants disagree.

Plunkett states that "[t]he motor speed is directly related to the VCO frequency which in turn is controlled by error amplifier 18." (Col. 4, lines 41-43). The error amplifier generates an error signal based on the back emf sampled across each of the windings, amplifies and integrates the error signal, provides gain and then generates a motor frequency signal for the VCO. The VCO then drives the circuit 12.

In contrast, the method of claim 1 generates "a speed control signal corresponding to a difference between a desired rotor angular velocity and a rotor speed inferred from a frequency of the drive voltage" and varies "an amplitude of the drive voltage in accordance with the speed control signal." (See Figs. 7-8; specification at page 13, line 21 to page 14, line 16).

Moreover, Applicants' invention reduces the noise and vibration in motor-driven medical implant devices by providing a method including commutation control and speed control as stated in the claims. Prior art methods such as the phase locked loop motor control disclosed by *Plunkett* can lead to false triggering and unwanted noise and vibration. (See the specification, page 1, line 19 to page 2, line 11). Furthermore, *Plunkett* states:

The present invention provides a simple and effective means of stabilizing a brushless DC motor without the need for external or auxiliary sensors by providing an error signal [that] . . . is integrated and applied to a voltage controlled oscillator, which, in turn, controls the frequency at which the motor's inverter sequentially energizes the stator windings. (Emphasis added)(Col. 2, lines 43-52).

Plunkett also states that:

An automatic powerup, reset and start timing circuit 30 aligns the stator and rotor with a reset command and provides a timed pulse signal to error amplifier 18 to cause it to generate a ramp and thereby accelerate the motor to a desired speed. In this way, the motor is self-starting and very quickly reaches the desired speed while delivering maximum torque. This is important in motors such as disk drive motors that are frequently stopped and started, and which must operate at one speed. (Emphasis added) (Col. 4, lines 46-55).

The claimed invention does not provide a drive control which controls the drive voltage in an "on-off" nature as in *Plunkett*. Such operation leads to acoustical noise and vibration which are undesirable in medical implant devices. (See the specification, page 2, lines 6-11).

Claims 1, 13, 23 and 24 each include similar elements which are distinguished from *Plunkett* for the reasons provided above. Accordingly, Applicants submit that claims 1, 13, 23 and 24, and claims 2-11, 14-16 which depend from claims 1 and 13,

respectively, are each patentably distinguished from *Plunkett* and in condition for allowance.


Claims 2, 3, 14 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Plunkett*. Claims 2 and 3 depend from independent claim 1 and claims 14 and 15 depend from independent claim 13. Accordingly, Applicants submit that claims 2 and 3, and claims 14 and 15, are patentably distinguished from *Plunkett* for the reasons provided above for claims 1 and 13, and for the further reason that *Plunkett* does not disclose or suggest the novel subject matter of claims 2 and 3, and claims 14 and 15 in combination with the novel subject matter of claims 1 and 13, respectively.

Claims 4 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Plunkett* in view of U.S. Patent No. 4,173,796 to Jarvick ("*Jarvick*"). Claims 4 and 5 depend from independent claim 1. Accordingly, Applicants submit that claims 4 and 5 are patentably distinguished from the combination of *Plunkett* and *Jarvick* for at least the reasons provided above for claim 1, and for the further reason that the combination of *Plunkett* and *Jarvick* does not disclose or suggest the novel subject matter of claims 4 and 5 in combination with the novel subject matter of claim 1.

In light of the above, Applicants submit that 1, 6-11, 13 ,16, 23 and 24 are patentable over the art of record because the cited art does not disclose, teach or suggest the subject matter of the claimed invention. Accordingly, Applicants request that claims 1, 6-11, 13 ,16, 23 and 24 be deemed allowable at this time and that a timely notice of allowance be issued in this case.

No fees are due. If any other fees are due in connection with this application, the Patent Office is authorized to deduct the fees from Deposit Account No. 19-1351. If such withdrawal is made, please indicate the attorney docket number (25658-458300) on the account statement.

Respectfully submitted,

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